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## Meeting Minutes: VV&A TWG Workshop Number 13

Navy Modeling and Simulation Management Office (NAVMSMO) Verification, Validation, and Accreditation (VV&A) Program Technical Working Group (TWG) Workshop Number 13 was held at Naval Meteorology and Oceanography Command (NMOC), Stennis Space Center, MS on 19 February 2003.

The workshop agenda is presented in enclosure 1. The focus of Workshop 13 centered on VV&A activities within Naval Meteorology and Oceanography Command, Missile Intelligence Center, and National Air Intelligence Center. Other workshop presentations discussed NMOC QA Validation process, Software Improvement efforts at NMOC to raise their processes to Capability Maturity Model (CMM) level III, and NAVMSMO Turbo Tool update and the NAVMSMO tutorial on VV&A. All available presentation slides have been included as separate attachments.

While some of the efforts have been mentioned before, the workshop again established that key aspects for successful VV&A implementation include developing clear and detailed user M&S requirements, forming collaborative and open working relationships between sponsoring/accrediting and proponent/development organizations, and having a formal, centralized, and maintainable process for documenting and tracking VV&A activities and outcomes.

### 1.0 NMOC VV&A Efforts

NMOC, presented the command's brief and then transitioned to presenting the METOC Product Development brief. This brief described what NMOC does in the area of data collection, data processing and database development. Additional comments described the processes and capabilities in their product development. Highlights of the brief discussed NMOC current capability to perform three-dimensional data collection in support of Naval operations and exercises. Similarly, he presented an overview of the NMOC Oceanographic and Atmospheric Master Library (OAML) and its ongoing efforts to support SECNAV initiatives. OAML is a library of core models, algorithms and databases designated by the CNO as "Navy Standards" to support the fleet environmental prediction systems. He further discussed the OAML configuration Management process for both fleet requirements and new development. Following the first presentation, a second NMOC presentation discussed ongoing joint efforts between the USN and USAF VV&A effort to establish Joint Meteorological Broker Language as part of a Data Standards Working Group in support of providing accurate



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and consistent Meteorological data to C4ISR systems. This included the process for which information can be requested. The presentation ended with the discussion of the ongoing efforts to establish a proposed technical standard to support this initiative. He stated work remains to be done, however a lot of progress has been made to reach the goal of a Joint approved language to support military operations.

NMOC presented ongoing efforts to improve software engineering processes to support operation in NMOC. The theme discussed the efforts at NMOC to reach CMM Level III, including the process by using IPTs to reach this level and ongoing efforts organization efforts to maintain this high level engineering process.

Following this presentation, LMSO, presented an overview of Lockheed Martin's quality assurance verification process in support of NMOC. This presentation delineated the internal processes in created to support in-house QA for NMOC.

## **2.0 VV&A at Missile and Space Intelligence Center**

The Missile and Space Intelligence Center (MSIC) representative presented an overview of the MSIC VV&A activities. His presentation covered how MSIC uses M&S from a legacy tools and future conceptual endeavors. He discussed ongoing endeavors in MSIC with the use of both the Joint Modeling and Simulation System (JMASS) and Digital Integrated Combat Evaluator (DICE). He stated that program offices are using JMASS, i.e., B-1B and F22 air combat simulator (ACS) but stated using these systems force MSIC to rely heavily on contractor support that translates to expensive revalidation. He further stated ongoing efforts now are focused on using in-house analysts and engineers who are familiar with commercial products such as "SIMULINK and MATLAB" to provide statistical simulations. He concluded by stating the use of these low-cost COTS products is part of their Threat Modeling and Analysis Program (TMAP) approach to modernize S&TI and databases. The philosophy is to use the COTS-based solutions and share tools and techniques across the community. NAIC, stated that his organization has been doing similar activities.



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## 3.0 NAIC/FTNR Process

The National Air Intelligence Center (NAIC) presented a briefing describing the basic philosophy associated with the Air Force threat validation process and corresponding support to accreditation of threat representations. He described the threat validation process used by his organization and focused on the role of the analyst and their participation in the validation process. He stated this was to ensure the model was accurate in relation to the requirements and the conceptual model. He concluded this process was to focus on working with the customers and the accreditation requirements.

## 4.0 NAVMSMO Turbo Tool and VV&A Tutorial

SPAWAR, Charleston presented to the group a demonstration of NAVMSMO's Turbo Tool. The tool is a word-based software to allow for the documentation of all appropriate VV&A information. Although still in beta testing, there were discussions between members on how the tool can be used to support their efforts. NAVMSMO presented a tutorial brief on NAVMSMO VV&A processes. The intent was to bring about awareness of VV&A process and to open discussion of common elements of VV&A. It was also presented to have audience review the process and recommend changes/modifications to existing processes. The brief included a walk-through the VV&A process in step with the M&S development process. There were discussions from the audience questioning the purported cost savings associated with VV&A and NAVMSMO will review and determine if it should be removed. Finally, she addressed questions concerning the NAVMSMO standards practice. In particular, she addressed the eight steps within the Technical Area Group (TAG) for a process to become an approved Navy-wide standard. The NAVMSMO VV&A tutorial was an excellent discussion point and provided those who are implementing VV&A a method to consider.



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## **5.0 Roundtable Discussions**

Following NAVMSMO 's presentation, discussion transitioned to an open discussion roundtable to address issues and areas where NAVMSMO can offer support to the community. The following issues and comments were raised during the roundtable.

### **Involvement with Exercises**

There was discussion on how to effectively participate in ongoing exercises and become aware of other models to support. NAVMSMO delineated that she had no access to the actual models but can accommodate the request of identifying POCs for the actual model. Further discussions included the need to provide information that represents the success of V&V and that M&S is an integral part of any program.

### **V&V of Legacy Systems**

Discussions about performing V&V on legacy systems were raised. In particular, an issue raised by both representatives from NAIC and MSOC was the expense of revalidating data using older models and the current efforts to transition to COTS based products such as SIMULINK and MATLAB has provided an enormous benefit in both static and dynamic modeling. Both gentlemen stated that these two products are way of the future in support of the community. The NAVMSMO representative discussed briefly her initiative on performing VV&A on COTs products in M&S.

### **Funding and CMM relationship**

There were discussions on funding issues affecting V&V. The representative from Pt Mugu, discussed the shrinking budget and attendant competition for funding amongst the community has, in his opinion, revealed the connection between organizations with CMM level III certification funding for VV&A. The representative from Northrop Grumman confirmed similarly that in NSWCCD



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there is a relationship between the two. Similarly, PT Mugu stated an organization's history with successful VV&A would get the work.

## **Miscellaneous**

Finally, there were discussions on the "selling" of VV&A to a program. CSC stated there is awareness at the working level of the practicality of having a VV&A plan in place, but he cautioned that the VV&A plan's depth should be specific and measurable in relation to fitting the program. NAIC concurred with the additional comment that funding is an empirical element of the M&S process.